

ABSTRACT OF THE DISCLOSURE

A cavity ring-down spectrometer includes:

- a) multiple detectors for monitoring the intensity of the radiation emitted from the cavity and the wavelength of the radiation injected into the cavity;
- b) controllers which turn off the radiation into the cavity and precisely adjust the temperature of, and current to, the laser gain medium; and
- c) means for adjusting the beam path length of the optical cavity to bring the cavity into resonance with the injected radiation. Additionally, disclosed is a method for using the spectrometer to detect a target analyte.